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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,273	11/20/2001	William Robert Hanson	035451-0145 (3682.Palm)	9592
26371	7590	03/09/2005	EXAMINER	
FOLEY & LARDNER 777 EAST WISCONSIN AVENUE SUITE 3800 MILWAUKEE, WI 53202-5308			SAWHNEY, HARGOBIND S	
			ART UNIT	PAPER NUMBER
			2875	

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/989,273	HANSON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Hargobind S. Sawhney	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-19, 22 and 24-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-19, 22 and 24-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The amendment and reply under 37 CFR 1.111 filed on December 22, 2004 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,982,092) in view Baur et al. (U.S. Patent No. 4,142,781).

Regarding claim 1, Chen ('092) discloses a lighting system for a display (Figure 3) comprising:

- a light source system including a light source 40 providing light not visible to the human eyes (Figure 3, column 1, lines 10-14, and column 3, lines 43-45);
- a reflective layer- combination of the fluorescent pigment layer 50 optically in contact with the reflecting layer 30- herein after referred as the reflecting layer 50,30 (Figure 3, column 3, lines 5-7 and 11-20);

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- the reflective layer 50,30 reflecting invisible light from the light source 40, and converting the invisible light into light visible to human eyes (Figure 3, column 3, lines 5-7 and 11-20);
- a display layer having pixels alterable with application of electrical charge – interpreted as a liquid crystal display (LCD) (not shown, column 1, lines 17-20) well known in the art, and as evidenced by Baur et al. (U.S. Patent No. 4,142,781);
- the display layer being illuminated by visible light from the reflective layer 50,30 (not shown, column 1, lines 17-20);
- the light source 40 located below the display layer – the lighting system operating as a back light source not shown, column 1, lines 17-20);

However, regarding Claim 1, Chen ('092) does not disclose a light source including a reflective layer having a phosphorescent.

On the other hand, Baur et al. ('781) discloses an electro-optical display device (Figure 9) comprising a fluorescent plate 1a, and an additional phosphorescent coating - a layer 25 containing phosphorescent particles- (Figure 9, column 9, lines 5-10).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting system of Chen ('092) by providing the phosphorescent coating as taught by Baur et al. ('781) for the benefits and advantages of amplifying the brightness of the display device, and for providing afterglow of the display after the device in switched-off.

Regarding claims 2, 4 and 7-9, Chen ('092) in view Baur et al. ('781) discloses the lighting system (Figure 3) further including;

- a light guide 10 (Chen, Figure 3, column 2, line 54);
- the light source 40 being a single light source, and being a light emitting diode (LED) 40 (Chen, Figure 3, column 3, lines 11-13);
- the reflective layer 50,30 including fluorescent coating 50 (Chen, Figure 3, column 3, lines 5-7 and 11-20) on a substrate;
- the light source providing an ultraviolet (UV) light (Chen, Figure 3, column 1, lines 9-12, and column 3, lines 34-38);--

Regarding Claim 6, Chen ('092) discloses a lighting system including a reflective layer on a substrate. However, Chen ('092) does not specifically teach the reflective layer including metallic coating. It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting system of Chen ('092) by providing a reflective surface (aluminum mirror surface) with metallic coating well known in the art, and as evidenced by Baur et al. ('781) in Claim 8.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,982,092) in view Baur et al. (U.S. Patent No. 4,142,781) as applied to claim 1 above, and further in view of Vossler (U.S. Patent No. 5,856,819).

Chen ('092) in view of Baur et al. ('781) teaches a light source 40 providing light having wavelength in a spectrum not visible to the human eyes (Figure 3, column 1, lines 10-14, and column 3, lines 10-14). However, neither combined nor individual

teaching of Chen ('092) and Baur ('781) specifically teaches the light source providing infrared (IR) light.

On the other hand, Vossler ('819) discloses a bi-directional presentation display 10 (Figures 1 and 2) illuminated with an IR light source – alternate to the light tube 70- (Figure 5, column 5, lines 44 and 49-57).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the lighting system of Chen ('092) in view of Baur ('781) by providing the IR-based lighting system as taught by Vossler ("819) for the benefits of making it usable in dark or at night with night vision equipment.

5. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,982,092) in view Vossler (U.S. Patent No. 5,856,819).

Regarding Claim 10, Chen ('092) discloses a lighting system for a display (Figure 3) comprising:

- a light source system including a light source 40 providing light not visible to the human eyes (Figure 3, column 1, lines 10-14, and column 3, lines 43-45);
- a reflective layer- combination of the fluorescent pigment layer 50 optically in contact with the reflecting layer 30- herein after referred as the reflecting layer 50,30 (Figure 3, column 3, lines 5-7 and 11-20);
- the reflective layer 50,30 reflecting invisible light from the light source 40, and converting the invisible light into light visible to human eyes (Figure 3, column 3, lines 5-7 and 11-20);

- a display layer having pixels alterable with application of electrical charge – interpreted as a liquid crystal display (LCD) (not shown, column 1, lines 17-20) well known in the art, and as evidenced by Baur et al. (U.S. Patent No. 4,142,781);
- the display layer being illuminated by visible light from the reflective layer 50,30 (not shown, column 1, lines 17-20);

However, Chen ('092) does not specifically teach a display layer being illuminated by infrared light. Instead, Chen ('092) makes the use of ultraviolet light source for illumination of the display layer.

On the other hand, Vossler ('819) discloses a bi-directional presentation display 10 (Figures 1 and 2) illuminated with an IR light source – alternate to the light tube 70- (Figure 5, column 5, lines 44 and 49-57).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the lighting system of Chen ('092) ~~in view of Baur ('781)~~ by providing the IR-based lighting system as taught by Vossler ('819) for the benefits of making it usable in dark or at night.

Regarding Claim 11, Chen ('092) in view of Vossler ('819) discloses a lighting system including a source of light. However, neither combined nor individual teaching of Chen ('092) and Vossler ('819) specifically discloses the light source being a light emitting diode (LED). On the other hand, use of LEDs for visible as well as infrared light is well known in the art as evidenced in Yamashita (US Patent No.: 4,599,537) for its compactness, long operational life and high-energy efficiency.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the lighting system of Chen ('092) by providing the LED as light source well known in the art for the benefits its compactness, long operational life and high-energy efficiency.

Further, It would be have been obvious to one of ordinary skill in the art at the time of the invention to meet the method limitations of claims 10 and 11 by applying the teaching of Chen ('092) in view Vossler ('819).

Regarding Claim 12, Chen ('092) in view of Vossler ('819) discloses a lighting system including an LCD with a display element. However, neither combined nor individual teaching of Chen ('092) and Vossler ('819) specifically discloses the display element being flexible. On the other hand, use of flexible liquid crystal display is well known in the art as evidenced in Lueder (US Patent No.: 6,559,918 B1) or Wakita et al. (US Patent No.: 5,307,190).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the lighting system of Chen ('092) in view of Vossler ('819) by providing the Flexible as light source well known in the art for the benefits of improved mechanical stability and displaying massages in multi-dimensional frame.

Regarding claims 13-15 Chen ('092) in view of Vossler ('819) discloses a lighting system further including:

- the light source being positioned behind the display element (not shown, Chen, column 1, lines 17-20);



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- the reflective layer including metallic (aluminum mirror surface) surface well known in the art, and as evidenced in claim 8 of Baur et al. ('781);
- the display element being an LCD (Chen, not shown, column 1, lines 17-19);

Further, It would be have been obvious to one of ordinary skill in the art at the time of the invention to meet the method limitations of claims 12-15 applying the teaching of Chen ('092) in view Vossler ('819).

Regarding claim 16, neither combined nor individual teaching of Chen ('092) and Vossler ('819) teach lighting system illuminating electronic paper(e-paper) displays.

It has been held that a recitation with respect to the manner in which a claim apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitation.

6. Claims 17-19, 22 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 5,982,092) in view Baur et al. (U.S. Patent No. 4,142,781) and Kim et al. (US Patent No.: 6,204,902 B1).

Regarding claim 17, Chen ('092) discloses a lighting system for a display (Figure 3) comprising:

- a light source 40 providing light not visible to the human eyes (Figure 3, column 1, lines 10-14, and column 3, lines 43-45);
- a light guide 10 dispersing the invisible light over a defined area (Figure 3, column 2, lines 56-62);

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- a converter 50,30 – the combination of the reflective layer 30 and the combination of the fluorescent pigment layer 50 optically in contact with the reflecting layer 30- herein after referred as the converter 50,30 (Figure 3, column 3, lines 5-7 and 11-20); and
- the converter 50,30 converting invisible light from the light source 40 into light visible to human eyes (Figure 3, column 3, lines 5-7 and 11-20).

Chen ('092) discloses a lighting system including a reflective layer on a substrate. However, Chen ('092) does not specifically teach the reflective layer including metallic coating. Further, Chen ('092) does not disclose a light source including a reflective layer having a phosphorescent.

On the other hand, Baur et al. ('781) discloses an electro-optical display device (Figure 9) comprising:

- a reflect plate including metallic mirrored coating (Figure 9, claim 8); and
- a fluorescent plate 1a, and an additional phosphorescent coating - a layer 25 containing phosphorescent particles- (Figure 9, column 9, lines 5-10).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting system of Chen ('092) by providing a reflective surface (aluminum mirror surface) with metallic coating well known in the art to reflect light for display illumination.

In addition, it would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting system of Chen ('092) by providing the phosphorescent coating as taught by Baur et al. ('781) for the benefits and advantages

of amplifying the brightness of the display device, and for providing afterglow of the display after the device is switched-off.

In addition, Chen ('092) discloses an LED planar light system usable as a light source for a liquid crystal display (Figure 3, column 1, lines 17-19). However, Chen('092) does not specifically teach the LED planar light system combined with a flexible display receiving and transmitting visible light.

On the other hand, Kim et al (' 902 B1) discloses flexible plate LCD device (Figure 1) receiving and transmitting visible light (Figure 1, column 2, lines 1-6).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the lighting system of Chen ('092) in view Baur et al. ('781) by providing the flexible display layer as taught by Kim et al (' 902 B1) for the benefits and advantages illuminating displays on non-planar surfaces.

Regarding claims 19,22, 24, 26 and 27, Chen ('092) in view Baur et al. ('781) and Kim et al (' 902 B1) discloses the display system further comprising:

- the flexible display (Kim, Figure 1) positionable over the light guide 10 (Chen, Figure 3, column 2, lines 56-61);
- a converter 50,30 – the combination of the reflective layer 30 and the combination of the fluorescent pigment layer 50 optically in contact with the reflecting layer 30- herein after referred as the converter 50,30 (Chen, Figure 3, column 3, lines 5-7 and 11-20);
- the light source 40 including a light emitting diode (LED) (Chen, Figure 3, column 3, line 39, claim 2);

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- the light source providing an ultraviolet (UV) light (Chen, Figure 3, column 1, lines 9-12, and column 3, lines 34-38); and
- the light source 40 combining with the light guide 10 to form a front lighting system (Chen, Figure 3, column 1, lines 17-19).

Regarding claims 18 and 25, Chen ('092) in view Baur et al. ('781) and Kim et al (' 902 B1) discloses the display system further comprising:

However, regarding claims 18 and 25, neither combined nor individual teaching Chen ('092) and ('781) teaches the display system having a back lighting system including a flexible display layer overlaying the light guide. On the other hand, Chen ('092) teaches a front lighting system having a light guide overlaying the flexible display layer.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the display system of Chen ('092) by positioning the flexible display layer overlaying the light guide, since it has been held that rearranging parts of an invention involves only routine skill in the art.

### ***Response to Amendment***

7. Applicant's arguments filed on December 22, 2004 with respect to the 35 U.S.C. 103(a) rejections of claims 1-27 have been fully considered but they are not persuasive.

Argument: Regarding the amended Claim 1, neither Chen ('092) by nor Baur et al. ('781) teaches or suggests a reflective layer having phosphorescent surface.

Response: As detailed in section 3 of this office action, Chen ('092) discloses a lighting system for a display (Figure 3) comprising:

- a reflective layer- combination of the fluorescent pigment layer 50 optically in contact with the reflecting layer 30- herein after referred as the reflecting layer 50,30 (Figure 3, column 3, lines 5-7 and 11-20);
- the reflective layer 50,30 reflecting invisible light from the light source 40, and converting the invisible light into light visible to human eyes (Figure 3, column 3, lines 5-7 and 11-20);

The fluorescent pigment layer 50 has been broadly interrelated as a coating when the layer is in optical contact with the reflection layer 30 (Chen).

Argument: Chen ('092) teaches an LED planar light source including a separate fluorescent pigment layer 50 (Chen, col. 3, lines 9-21). In the event that the "luminescent crystal 40 emits ultraviolet rays, a separate filter layer 60 must be applied on the light conductive plate 10 for filtering away the UV rays and allowing the visible light to pass.

Thus, there is no suggestion or teaching that the "fluorescent pigment layer 50" is a "coating".

Response: The teaching of Chen ('092) is not found in lines in column 3, lines 9-21. Instead, the above-indicated teaching is provided in column 3, lines 34-38, and the teaching is applicable for the second embodiment. This second embodiment has not been applied for the rejection of Claim 1. Further, as indicate above, a fluorescent pigment layer has been broadly interrelated as a coating on the reflective layer, when the layer is in optical contact with the reflection layer.

Argument: Baur et al. ('781) discloses an electro-optical display device (Figure 9) comprising a fluorescent plate 1a, and an additional phosphorescent coating - a layer 25 containing phosphorescent particles- (Figure 9, column 9, lines 5-10).

The above-indicated teaching of does not teach the fluorescent plate, with an additional phosphorescent coating, being a reflective plate.

Response: As detailed in section 3 of this office action, please not the following:

Regarding Claim 1, Chen ('092) does not disclose a light source including a reflective layer having a phosphorescent.

On the other hand, Baur et al. ('781) discloses an electro-optical display device (Figure 9) comprising a fluorescent plate 1a, and an additional phosphorescent coating - a layer 25 containing phosphorescent particles- (Figure 9, column 9, lines 5-10).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting system of Chen ('092) by providing the phosphorescent coating as taught by Baur et al. ('781) for the benefits and advantages of amplifying the brightness of the display device, and for providing afterglow of the display after the device in switched-off.

The above-indicated text reflects that an additional phosphorescent coating applied on a fluorescent plate 1a. Thus, teaching of Baur et al. ('781) could be provided on the reflective coating of Chen ('092).

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. Thus, based on the teaching of Baur, one of ordinary skill in the art at the time of the invention would have been motivated to modify the device of

Chen for efficient conversion of invisible light to visible light, and for producing afterglow of the device.

Argument: In the discussion of the rejection of Claim 10, Section 7 of the office action mailed on September 22, 2004, the examiner cited Baur et al. ('781) which is not supporting the rejection. Clarification needed.

Response: The examiner is appreciative for pointing the above-indicated error. The erroneous statement has been strike-through in this office action. Please note that the above-indicated corrective measure does not alter the intension of the obviousness statement.

Argument: Regarding Claims 17-27, Inoue et al. ('702) does not suggest or teach a flexible display layer receiving and transmitting visible light.

Response: Applicant's arguments have been fully considered but they but are moot in view of the new ground(s) of rejections.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bennett (US Patent 4,674,840 B1



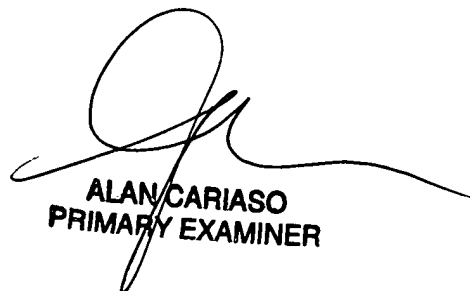
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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 571 272 2380. The examiner can normally be reached on 6:15 - 2:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 571 272 2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HSS  
3/3/2005



ALAN CARIASO  
PRIMARY EXAMINER